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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

GURZO, PAUL M

ART UNIT PAPER NUMBER

2881

DATE MAILED: 02/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/971,119

Applicant(s)

FRIES ET AL.

Examiner

Paul Gurzo

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s): ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.



DETAILED ACTION

Claim Objections

Claim 39 is objected to because of the following informalities: It is dependent on claim 40. If it should be dependent on claim 40, then renumbering is in order. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,7,8,12-16,24,27,29,30,34,37,39,40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (5,192,865), and further in view of Slivon et al. (4,982,097).

Regarding claims 1, 24, and 34, Zhu teaches a mass spectrometer comprising a watertight case having an inlet (1), a means for transforming a solution into ions (col. 2, lines 21-22), a means for directing the fluid to the transferring means (col. 5, line 58 - col. 6, line 8), and a quadrupole mass filter (14) for analyzing the gas-phase molecules (col. 7, lines 27-32 and Fig. 1a). Zhu does not explicitly specify transformation into a gas phase. However, it is known in the art that liquid chromatography systems transfer solutions (liquids) into a gas as taught by Slivon et al. (col. 1, lines 32-46). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to transform from a solution phase to a gas phase

because it is the underlying requirement of liquid chromatography systems. Further, it is known that these systems need to operate in a watertight case to achieve optimum results, and, because of this characteristic, it can easily operate in any type of environment.

Regarding claims 7, 29, and 39, Zhu teaches that the mass filter provides both sample mass and structure data (col. 7, lines 15-21), which teaches on the use of a computer communication because one is needed to collect and display the data.

Regarding claims 8,16,30, and 40, Zhu depicts a pump (8c) for creating a vacuum within the analyzing means (col. 10, line 51 - col. 11, line 15), and this analyzing means can be viewed as a third watertight case.

Regarding claim 12, Zhu teaches the use of maintaining a vacuum (col. 8, lines 10-12).

Regarding claim 13, both systems can be viewed as having multiple watertight cases with the appropriate means residing in the appropriate cases (Zhu, Fig. 1a and Chiang, Fig.1).

Regarding claims 14 and 15, Zhu teaches the use of atmosphere pressure ionization and electrospray ionization (col. 2, lines 36-65).

Regarding claims 27 and 37, Slivon et al. teach a means for regulating the temperature along the directing means (col. 3, lines 49-56 and lines 33-44).

Claims 2,3,5,6,17,19,20,25,28,35,38,42,44, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (5,192,865), in view of Slivon et al. (4,982,097), and further in view of Chiang (6,100,522).

Regarding claim 2, it is obvious that the prior art makes use of a selective transport means, but this means is not explicitly depicted between the introduction and analyzing means. However, Chiang teaches a selective transport means (56 and 58) that is between the directing



means (28) and the analyzing means (30) (col. 3, lines 3-33 and Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use this selective transport means because it will ensure the proper pressure and prevent an undesirable increase.

Regarding claim 3, Zhu teaches the use of nonpolar compounds (col. 7, lines 7-14).

Regarding claim 5 Slivon et al. teach a means for regulating the temperature along the directing means (col. 3, lines 49-56 and lines 33-44).

Regarding claim 6, Chiang clearly depicts a pump (54) for directing control fluid from a reservoir (52) to the transforming means (col. 3, lines 26-33 and Fig. 1).

Regarding claims 17 and 42, Zhu teaches a pressure vessel (col. 7, line 61 - col. 8, line 12), and it is obvious that in order to maintain this pressure vessel there must be some type of control means. Chiang clearly depicts a pump (54) for directing control fluid from a reservoir (52) to the transforming means (col. 3, lines 26-33 and Fig. 1) as well as selective transport means (56 and 58) that is between the directing means (28) and the analyzing means (30) (col. 3, lines 3-33 and Fig. 1). Zhu teaches the use of a mass spectrometer pressure vessel (col. 10, lines 60-67), and Slivon et al expand upon the obvious fluid to gas transformation (col. 1, lines 32-46). There must be an introduction probe present so that the needed fluid is introduced. Further, Chiang depicts a fluid line (Fig. 1, ref. 78). Zhu teaches a quadrupole mass filter (14) (col. 7, lines 27-32 and Fig. 1a) that is obviously in fluid communication with the probe. Zhu also teaches the claimed data analysis means (col. 7, lines 15-21) and the claimed roughing pump pressure vessel (8c) for providing low pressure to the mass filter (col. 8, lines 62-65 and col. 10,



lines 60-67). The claimed line connecting the vacuum pump and mass filter is depicted in Fig. 1a.

Regarding claims 19 and 44, Slivon et al. teach a means for regulating the temperature (col. 4, lines 43-44).

Regarding claims 20 and 45, Zhu teaches that the mass filter provides both sample mass and structure data (col. 7, lines 15-21), which teaches on the use of a computer communication because one is needed to collect and display the data.

Regarding claims 25 and 35, the above-applied prior art teaches the use of selective transport properties and the use of nonpolar materials as described above.

Regarding claim 28, Chiang clearly depicts fluid from the control source (52) and sample source (22) and teaches the use of a pump (54) for directing the control fluid to the introduction probe (col. 3, lines 4-33).

Regarding claim 38, Chiang teaches the use of a first reservoir for holding a control fluid and a pump for directing the fluid to the transforming means as stated above. Further, Chiang teaches the use of a waste volume (reservoir) which will act to hold this waste (col. 2, lines 35-38 and col. 4, lines 62-66).

Claims 4,18,26,36, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (5,192,865), in view of Slivon et al. (4,982,097), in view of Chiang (6,100,522), and further in view of the applicant's admitted prior art.

The above-applied prior art is silent to the use of polydimethylsiloxane, but the applicant's prior art states that the method of liquid chromatography is based on the principles of membranes such as polydimethylsiloxane (page 7, lines 15-17). Therefore, it would have been



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obvious to one of ordinary skill in the art at the time the invention was made to use polydimethylsiloxane because it is widely held that it is used in this type of system.

Claims 9 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (5,192,865), in view of Slivon et al. (4,982,097), and further in view of Haas et al. (6,351,983).

The above-applied prior art teaches the use of pumps connected to the mass filter housing, but do not specify the claimed series connection. However, Haas et al. teach the use of turbomolecular drag pumps (30) and diaphragm pumps (32) (col. 3, lines 44-62, and Fig. 1). Further, Fig. 1 clearly depicts the claimed series connection, and though the drag pumps are connected in the series, it is obvious that the diaphragm pumps could be used for the series connection instead. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the prior art to include the claimed connection because this will help bring the chamber to the proper pressure.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (5,192,865), in view of Slivon et al. (4,982,097), in view of Haas et al. (6,351,983), and further in view of Young (5,871,336).

Zhu teaches the use of a heat sink (20) for dissipating heat (col. 12, line 51 - col. 13, line 23). This heat sink is not attached to the pump for the mass filter, but it is known that vacuum pumps create a heated environment and that some dissipation of this heat is needed, as taught by Young. He states that a pump (15) may additionally include a heat sink connected to the semiconductor substrate to dissipate the heat therein (col. 3, lines 56-59, and Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use this heat sink in thermal contact with the heat conducting material because this will create



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a temperature differential across the flow tube that connects the vacuum pump with the mass filter (11).

Claims 21 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (5,192,865), in view of Slivon et al. (4,982,097), in view of Chiang (6,100,522), and further in view of Haas et al. (6,351,983).

The above-applied prior art teaches the use of pumps connected to the mass filter housing, but do not specify the claimed series connection. However, Haas et al. teach the use of turbomolecular drag pumps (30) and diaphragm pumps (32) (col. 3, lines 44-62, and Fig. 1). Further, Fig. 1 clearly depicts the claimed series connection, and though the drag pumps are connected in the series, it is obvious that the diaphragm pumps could be used for the series connection instead. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the prior art to include the claimed connection because this will help bring the chamber to the proper pressure.

Claims 22,23, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (5,192,865), in view of Slivon et al. (4,982,097), in view of Chiang (6,100,522), and further in view of Young (5,871,336).

Zhu teaches the use of a heat sink (20) for dissipating heat (col. 12, line 51 - col. 13, line 23). This heat sink is not attached to the pump for the mass filter, but it is known that vacuum pumps create a heated environment and that some dissipation of this heat is needed, as taught by Young. He states that a pump (15) may additionally include a heat sink connected to the semiconductor substrate to dissipate the heat therein (col. 3, lines 56-59, and Fig.1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made



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to use this heat sink in thermal contact with the heat conducting material because this will create a temperature differential across the flow tube that connects the vacuum pump with the mass filter (11).

Claims 32,33, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (5,192,865), in view of Slivon et al. (4,982,097), and further in view of Young (5,871,336).

Zhu teaches the use of a heat sink (20) for dissipating heat (col. 12, line 51 - col. 13, line 23). This heat sink is not attached to the pump for the mass filter, but it is known that vacuum pumps create a heated environment and that some dissipation of this heat is needed, as taught by Young. He states that a pump (15) may additionally include a heat sink connected to the semiconductor substrate to dissipate the heat therein (col. 3, lines 56-59, and Fig.1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use this heat sink in thermal contact with the heat conducting material because this will create a temperature differential across the flow tube that connects the vacuum pump with the mass filter (11).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Gurzo whose telephone number is (703) 306-0532. The examiner can normally be reached on M-Thurs. 7:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached on (703) 308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

PMG
February 6, 2003



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